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ABSTRACT

Development of proper attitudes, personal commitment, and direct involvement regarding the health of the community are the goals of this prototype curriculum for grades 7-9. Since man continues to change his natural environment, increasing awareness of the possible consequences of these changes to human life is stressed. Specific curriculum content studies: (1) history of public health, (2) scope of current public health problems, (3) relationships among environment, disease, and health, (4) environmental health problems, and (5) practices in disease prevention and control. Appended material includes a community clean air checklist, agencies involved in air pollution control, key dates in Federal Clean Waters Program, and bibliographies of multimedia resources. This publication is one in a series of health curriculum materials devoted to environmental and community health (Strand IV). Four other strands deal with physical and mental health, sociological health problems, and education for survival. The format consists of four columns intended to provide teachers with: (1) a basic content outline, (2) major understandings and fundamental concepts, (3) teaching aids and learning activities, and (4) information about resource materials, sources, and personnel. Because of the comprehensive nature of the total curriculum, teachers are advised to become familiar with all strands presently in print. Related documents in Strand IV are ED 037 738-9, ED 049 477-8, and SE 016 280-6. (BI)

ED 077726

PROTOTYPE
CURRICULUM MATERIALS
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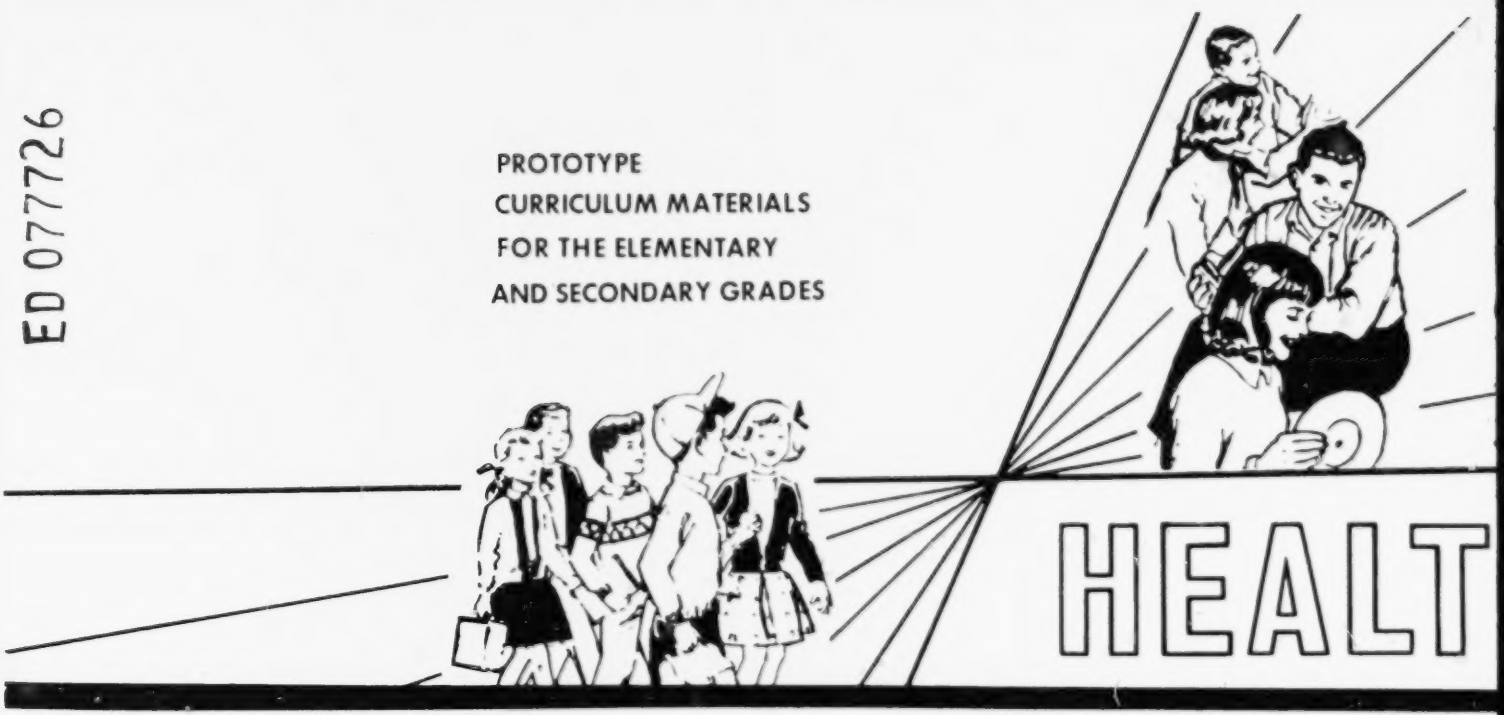

STRAND IV ENVIRONMENTA AND COMMUNITY HEALTH

Environmental and Public Heal
Grades 7, 8, and 9

Special edition for
evaluation and discussion

THE UNIVERSITY OF THE STATE OF NEW YORK/THE STATE EDUCATION DEPARTMENT
BUREAU OF SECONDARY CURRICULUM DEVELOPMENT/ALBANY, NEW YORK 12224/1971

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PROTOTYPE
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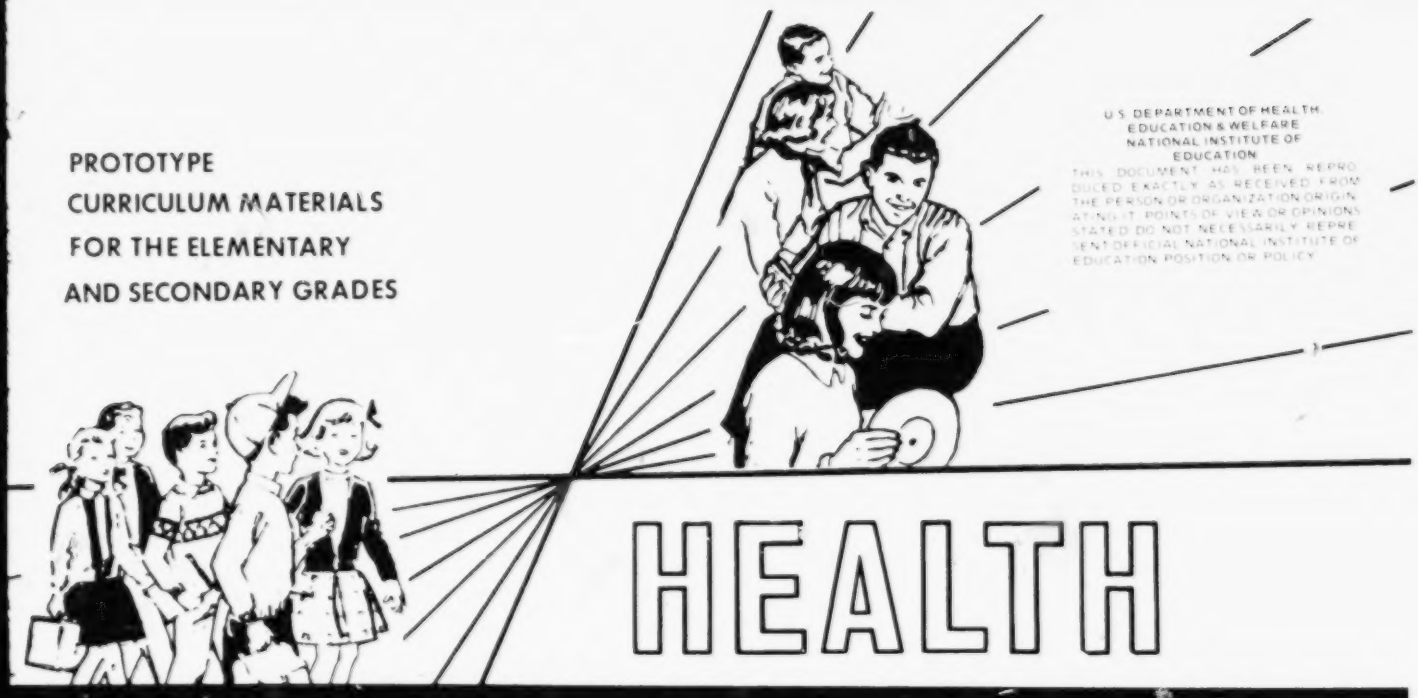

HEALTH

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HEALTH CURRICULUM MATERIALS
Grades 7, 8, 9

STRAND IV — ENVIRONMENTAL AND COMMUNITY HEALTH

ENVIRONMENTAL AND PUBLIC HEALTH

The University of the State of New York/The State Education Department
Bureau of Secondary Curriculum Development/Albany 12224
1970

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Director, Division of General Education
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Joseph D'Elia

FOREWORD

This publication contains curriculum suggestions for teaching Strand IV — Environmental and Community Health: Environmental and Public Health, for grades 7, 8, and 9.

The publication format of four columns is intended to provide teachers with: a basic content outline in the first column; a listing of the major understandings and fundamental concepts which children may achieve in the second column; and information specifically designed for classroom teachers which should provide them with resource materials, teaching aids, and supplementary information in the third and fourth columns.

The comprehensive nature of the health program makes it imperative that teachers gain familiarity with all of the strands presently in print. In this way, important teaching-learning experiences may be developed by cross-referring from one strand to another.

It is recommended that the health coordinator in each school system review these materials carefully and consult with teachers, administrators, and leaders of interested parent groups in order to determine the most appropriate manner in which to utilize this strand as an integral part of a locally adapted, broad and comprehensive program in health education.

The curriculum materials presented here are in tentative form and are subject to modification in content and sequence. Critiques of the format, content, and sequence are welcomed.

Gordon E. Van Hooft
Chief, Bureau of Secondary Curriculum Development

William E. Young
Director, Curriculum Development Center

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OVERVIEW

The junior high school student is experiencing a stage of growth which makes it highly desirable that he become directly involved in the environmental and public health problems which obtain within his community. To bring about the development of proper attitudes, personal commitment, and direct involvement regarding the health of the community, each student should be provided with learning experiences related to –

1. His acquisition and understanding of basic knowledge of the pertinent aspects of the environment and its pollution;
2. His understanding of the urgent and critical nature of our public health problems and his becoming motivated toward bringing about a reversal of the trends in environmental destruction; and
3. His becoming personally committed to the immediate improvement of the environment and actively involved as a future adult citizen.

Since man continues to change his natural environment, he must become increasingly cognizant of the possible consequences of these changes to human life. Students should become aware of changes that affect life; they should become aware of what they can do, individually and collectively, to prevent harmful results, and maximize beneficial results of these changes. It is the school's immediate responsibility to evoke this awareness. Students should explore these significant questions:

What are the major public health problems?
What factors have created our present environmental and public health problems?
What kinds of public health programs exist? How successful are they?
How can each student become more actively involved in activities which will improve the environment?
What steps should be taken to show our recognition that our generation holds the earth and environment in trust for future generations?

OUTCOMES

The development of positive attitudes toward one's personal relationship to and responsibility for the maintenance and improvement of a healthful environment should be the major goal to be accomplished by each student. To achieve this end each student in grades 7, 8, and 9 should —

Understand the nature of public health practice;

Understand the influence of history in establishing foundations for the extensive public health practices which exist today

Become familiar with the kinds of public health problems which exist and why they have become major problems;

Appreciate the changes which have occurred in the nature of health problems and the need to deal effectively with them on a group basis;

Understand why some health problems are personal in nature and others are the concern of the whole community; and

Learn how to become involved in ways of making the future a more healthful time to live.

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMEN FOR
I. History of Public Health	Many of the basic principles of public health practice today have evolved from historical experiences with social methods of dealing with public health problems.	Identify and compare public health practices of the past with those of today.	The teach chapter *Health* by chapters *Principle Administr* Hanlon.
A. Foundations of public health	Solutions or partial solutions to many of our present-day health problems were discovered many years ago. Many individuals were responsible for the discovery of health science knowledge throughout history.	Have students write a brief essay on the needs and functions of a local public health development. Each student should understand and be able to use the following vocabulary: epidemic, disease, endemic, pandemic, quarantine, public health, environment. Have students research the course of the Plague across Europe. This is still an exciting exercise in the epidemiology of a pandemic disease. (Use films or slides of this period.) Have the class develop guidelines for surveying the local community's public health. Include in your checklist the major environmental health problems of air and water pollution, waste disposal	A brief s cal highl include: for grade the above brief sum - Egyptia - Hebrew - Greek h - Roman h - Highlig Ages - Crusade - Colonia - Period - English - Miasma - Bacteri - Modern Some of t contribut knowledge Hippocrat "Father o anticipat method of treating Galen (ab

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
Many of the basic principles of public health practice today have evolved from historical experiences with social methods of dealing with public health problems.	Identify and compare public health practices of the past with those of today.	The teacher should refer to chapter 1 in *Community Health* by C.L. Anderson, or chapters 1 and 2 in *Principles of Public Health Administration*, by J.J. Hanlon.
Solutions or partial solutions to many of our present-day health problems were discovered many years ago. Many individuals were responsible for the discovery of health science knowledge throughout history.	Have students write a brief essay on the needs and functions of a local public health development. Each student should understand and be able to use the following vocabulary: epidemic, disease, endemic, pandemic, quarantine, public health, environment. Have students research the course of the Plague across Europe. This is still an exciting exercise in the epidemiology of a pandemic disease. (Use films or slides of this period.) Have the class develop guidelines for surveying the local community's public health. Include in your checklist the major environmental health problems of air and water pollution, waste disposal	A brief summary of historical highlights should include: (See this strand for grades 4, 5, and 6 and the above sources for a brief summary.) - Egyptian health codes - Hebrew health codes - Greek health codes - Roman health codes - Highlights of the Dark Ages - Crusades and Renaissance - Colonial America - Period of Mysticism - English reforms - Miasma Period - Bacteriological Period - Modern Era Some of the people who contributed to the health knowledge are: Hippocrates (460?-377? B.C.) "Father of Medicine" - anticipated the scientific method of studying and treating disease. Galen (about 130-200)

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUP
		of liquids and solids, radiation, noise pollution, pests, and so on. Have students visit the local health department. Students may want to relate some of these problems to the historical discoveries and to the degree to which we are presently succeeding in overcoming these. Why the great lag in some cases?	Gre phy ear rec Gre Cel and the Ara the Emp - E - A And ana Fra and Wil dis of Van 172 exi thr mic Syd fat Jen tro tiv com pox yel Pas tha are ent out
	Although many individuals have been concerned about our environment, it is just recently that people, in general, have begun to recognize their increasing role in the control of the environment.	Discuss the key developments during the Renaissance, such as the development of anatomy and physiology, use of the microscope in the health sciences, the beginnings of bacteriology and immunology. Discuss why there was a 15-25-year interval between the several pandemics of smallpox in Colonial America. Show the film: *Health heroes: the battle against disease*.	

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	of liquids and solids, radiation, noise pollution, pests, and so on. Have students visit the local health department. Students may want to relate some of these problems to the historical discoveries and to the degree to which we are presently succeeding in overcoming these. Why the great lag in some cases?	Greek and later Roman physician - systematized earlier medical experience recorded by Egyptians and Greeks. Celsus - Roman mathematician and physician who described the symptoms of infection. Arab and Jewish medicine in the height of Mohammedan Empire: - Rhayes - Avicenna Andrea Vesalius (1514-1564) anatomy and surgery. Francastoro - discovered and documented syphilis. William Harvey (1578-1657) discovered the circulation of blood. Van Leeuwenhoek - (1632-1723) demonstrated the existence of microorganisms through the use of the microscope. Sydenham (1624-1689) - father of epidemiology. Jenner (1749-1813) - introduced the first preventive measure against a communicable disease, smallpox vaccine, concerned with yellow fever, etc. Pasteur (1822-1895) - showed that communicable diseases are caused by micro-organisms entering the body from the outside, (germ theory).
Although many individuals have been concerned about our environment, it is just recently that people, in general, have begun to recognize their increasing role in the control of the environment.	Discuss the key developments during the Renaissance, such as the development of anatomy and physiology, use of the microscope in the health sciences, the beginnings of bacteriology and immunology. Discuss why there was a 15-25-year interval between the several pandemics of smallpox in Colonial America. Show the film: *Health heroes: the battle against disease.*	

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPL
		Develop and organize a resource center of information related to public and environmental health. Include a file of students' research papers and other materials they have developed which may be used by other students. Each student may select one great person who has contributed to public health, find out all they can about him, and report to the class. Develop a chart on these people that shows how public health practice was influenced by their work.	Semme pione child Koch tion and t bacte Reed of ye Ehrlic covere effect VonBeh immuni diphth Woodar synthe combat Salk - agains Sabin agains
B. Beginnings of modern public health	Modern public health practices include the prevention of disease, prolonging life, and promoting health and efficiency.	Obtain copies of the Samuel Shattuck report and the Chadwick report. Some students may want to study these reports and determine their implications for today's public health problems, contrasting the two reports. Some class discussions should follow.	For a these pages *of Pub* *tion,* These and de may wi major strengt for st

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
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lodern public health practices include the prevention of disease, prolonging life, and promoting health and efficiency.	Obtain copies of the Samuel Shattuck report and the Chadwick report. Some students may want to study these reports and determine their implications for today's public health problems, contrasting the two reports. Some class discussions should follow.	For a brief description of these two reports refer to pages 24, 25 in *Principles of Public Health Administration*, by J.J. Hanlon. These reports are complex and detailed. The teacher may wish to summarize the major recommendations, strengths, and weaknesses for student use.

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPP
	The study of past efforts in controlling disease helps to give us insight into present and future public health practices.	Have students identify the purposes of organized public health practice. -How do such efforts improve individual effectiveness? -What areas of health practice are most urgent in today's society? Why? -How can each person, young or old, assist the professional public health efforts to improve man's quality of life?	Publ (Win is t prev long heal thro effo -the vir -the inf -the vid -the and the pre dis -the mac one ade of zat eve his and
II. Scope of Current Public Health Problems	The extent of responsibilities for official public health agencies include long-range programs as well as programs to alleviate immediate health problems.	Refer to the student survey suggested in IA.	Scop as f 1. T a c i

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The extent of responsibilities for official public health agencies include long-range programs as well as programs to alleviate immediate health problems.	Refer to the student survey suggested in IA.	<u>Scope of public health is as follows</u>: 1. Those fields in which activity must be on a community basis which include: -the supervision of food, water, milk supplies

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	The fields of public health concern and practice range from the individual to complex societal groups. The common goal of these health sciences is basically to improve the quality of man's health.	Invite the county commissioner of health to class to discuss the kinds of programs presently in operation and the kinds of programs planned for the future. -Do these programs successfully improve our living conditions? How? Why? -Are programs which are planned for the future aimed at the more critical health issues? Explain. Visit a sanitary land fill. -How does this technique control rat infestation?	-inse -prev wate 2. Those preve disab matur -comm -diet -effe narc that -alle and sour -spec sona diso -occu -cance dete -cardi -condi with child opmen -hered -accid -rehab -denta 3. Those which offici -profe and e -promo distr nel a

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OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUP
			4.
A. Community and public health practice	Community health practice seeks to attain for each citizen: an absence of disabling defects and disorders, a state of vitality with an abundance of energy, the opportunity to do the things he is capable of doing, and the expansion of the individual's field of constructive activities. A community is a group of inhabitants who live in a somewhat localized area under similar regulations of conduct and who have common interests and goals.	How might one's occupation affect health status? Are some occupations actually hazardous to health? Explain. Have some members of the class read and report on the following books: *Eleven blue men* by B. Roueche *Rats, lice and history* by H. Zinser Some members of the class may want to obtain copies of local statistics for the past year and make some comparison with State or Federal figures. - What kinds of, and how many, public health personnel does this department have? Is this adequate for necessary jobs?	Fo ti 45 *Li* "A th se se ti he An he *He* su 1. 2.

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
		-establishment of standards as a means to realize universal quality care 4. Research - scientific investigation and evaluation, relative to man's health and the sciences which deal with its improvement.
Community health practice seeks to attain for each citizen: an absence of disabling defects and disorders, a state of vitality with an abundance of energy, the opportunity to do the things he is capable of doing, and the expansion of the individual's field of constructive activities. A community is a group of inhabitants who live in a somewhat localized area under similar regulations of conduct and who have common interests and goals.	How might one's occupation affect health status? Are some occupations actually hazardous to health? Explain. Have some members of the class read and report on the following books: *Eleven blue men* by B. Roueche *Rats, lice and history* by H. Zinser Some members of the class may want to obtain copies of local statistics for the past year and make some comparison with State or Federal figures. - What kinds of, and how many, public health personnel does this department have? Is this adequate for necessary jobs?	For a more complete description of community see pages 451-454, *Health for Effective Living*, by Johns et al., "A good community is one that provides essential services including health services." A health condition becomes a community health problem if: • it is of a magnitude, or has potential to affect large segments of a community • it can be prevented or corrected through techniques applicable to mass populations. Another definition of public health (Hanlon, J.J., *Public Health Administration*) summarizes seven categories: 1. activities conducted on a community basis 2. activities designed to prevent illness,

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		- How closely do these practices relate to the definition of public health given in I-B of this strand? - Who benefits most from public health activities of official agencies — high, or low, socioeconomic groups? Why?	dis dea 3. act pro 4. act the tec of 5. pub 6. com pla 7. res tec tiv
B. Specific public health problems	Public health problems range from personal disabilities which may affect a community indirectly (diabetes, for example) to conditions or environmental situations which threaten the health of masses of people (communicable disease or air pollution, for instance).	Show the film: *Your health and your community*, McGraw-Hill. Have a member of the class obtain copies of the latest legislation regarding public health. (Write to your Congressman for these bills.) Invite the regional office representative for the New York State Department of Health or Congressman to class to discuss these legislative bills.	Some ex communi today i - popu - heal to t rod pol and - geria - menta - drugs chemi - cardi - canc - healt to fo
III. Relationships Among Environment, Disease, and Health	The factors which are related to the conservation of human resources are the interactions of man with his natural and artificial environments.	Discuss what is meant by the conservation of human resources.	(C.L. A Health,

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	- How closely do these practices relate to the definition of public health given in I-B of this strand? - Who benefits most from public health activities of official agencies — high, or low, socioeconomic groups? Why?	disability, and premature death 3. activities related to the provision of medical care 4. activities concerned with the collection, protection, and analysis of vital records 5. public health education 6. comprehensive health planning and evaluation 7. research--scientific, technical, and administrative
Public health problems range from personal disabilities which may affect a community indirectly (diabetes, for example) to conditions or environmental situations which threaten the health of masses of people (communicable disease or air pollution, for instance).	Show the film: *Your health and your community*, McGraw-Hill. Have a member of the class obtain copies of the latest legislation regarding public health. (Write to your Congressman for these bills.) Invite the regional office representative for the New York State Department of Health or Congressman to class to discuss these legislative bills.	Some examples of major community health problems today include: - population increases - health problems relative to the environment; rodents (rats), insects, pollution of air, water and general environment - geriatrics - mental health - drugs, medicines, and chemicals - cardiovascular diseases - cancer - health problems related to food and nutrition
The factors which are related to the conservation of human resources are the interactions of man with his natural and artificial environments.	Discuss what is meant by the conservation of human resources.	(C.L. Anderson, Community Health, Chapter 3)

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		Invite the public health officer or members of his staff to class to discuss their role in improving the environment. What other functions do they have? What is the responsibility of each individual toward his environment and himself?	Aspe are: 1. P n E w r s 2. B E d p p v a
	Man is many things. Human ecology is the study of the relationship between human beings and their environment. Man lives in organic relationship with his environment and a large degree of interdependency exists. To a certain extent, man can control his environment by controlling: 1. the direction of human population growth 2. agriculture 3. technological advances 4. the quality and quantity of the food supply and other vital resources.		3. B i E s l m p C i l 4. C i c 5. E a c f
A. Shared environment	Environmental changes are necessary for improvement in public health and gains in human longevity.	Organize a panel discussion on the topic,"Can health conservation promote or contribute to peace?"	Pres prac that heal lo

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Environmental changes are necessary for improvement in public health and gains in human longevity.	Organize a panel discussion on the topic,"Can health conservation promote or contribute to peace?"	Present environmental practices and conditions that may lead to future health problems include: long-term exposure to

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLE
	Some of the environmental changes which have added to man's quality of life and longevity include improved: -quality of foods -quality of water supplies and sources -control of environmental temperature through air conditioning and heating systems -lighting conditions -transportation methods -control and disposal of waste products -control of the effects of pests -communications system		air . wide (eco prob . wide in m husb . radi . nois . over . incr trans . use . dump refu . dump haza indi . chan tion . and . gene bala
B. Effect of the environment on man	Although man has learned to deal more effectively with the threats to his health, he has also created new threats such as pollution of the air he must breathe.	Obtain vital statistics reports from the U.S. Government Printing Office and the New York State Department of Health. Have a committee of students compile pertinent data related to morbidity and mortality for the past 20 years. Analyze these data. Report to the class.	

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
Some of the environmental changes which have added to man's quality of life and longevity include improved: -quality of foods -quality of water supplies and sources -control of environmental temperature through air conditioning and heating systems -lighting conditions -transportation methods -control and disposal of waste products -control of the effects of pests -communications system		air pollutants . wide use of pesticide (ecological and genetic problems) . wide use of antibiotics in medical and animal husbandry fields . radiation exposure . noise pollution . overcrowding . increased speeds of transportation vehicles . use of atomic energy . dumping of garbage and refuse in oceans . dumping or burying of hazardous chemicals indiscriminately . changes in man's occupations . and his ability to adapt . general ecological imbalances
Although man has learned to deal more effectively with the threats to his health, he has also created new threats such as pollution of the air he must breathe.	Obtain vital statistics reports from the U.S. Government Printing Office and the New York State Department of Health. Have a committee of students compile pertinent data related to morbidity and mortality for the past 20 years. Analyze these data. Report to the class.	

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUP
		- What morbidity and mortality changes have occurred? Why? - Is man improving his environment?	
IV. Environmental Health Problems			
A. Water			
1. uses	Water is one of the most important commodities man consumes; his need is ever-increasing, it is a prime necessity of life. Man needs water for: . recreation . irrigation . industry . domestic use: cleansing and cooling the body, objects, or environment . transportation - conveyor for disposal of human and industrial waste . air conditioning . fire extinguisher	Have students review the water needs of their: -family -school -community Have each student keep a record of the water he uses each day. Have each tabulate and compare his results with those of other students. Invite a speaker from a local industry to describe its uses of water.	Ran dwe gal The as 50 50 10 20 10 Nin and cir ret add in 196 198 200
2. sources	The source of water will vary depending upon its intended use.	Show the film *Good Riddance*, (Color - 29 min.) New York State Health Department.	Exa are cis spr

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	- What morbidity and mortality changes have occurred? Why? - Is man improving his environment?	
Water is one of the most important commodities man consumes; his need is ever-increasing, it is a prime necessity of life. Man needs water for: . recreation . irrigation . industry . domestic use: cleansing and cooling the body, objects, or environment . transportation - conveyor for disposal of human and industrial waste . air conditioning . fire extinguisher	Have students review the water needs of their: -family -school -community Have each student keep a record of the water he uses each day. Have each tabulate and compare his results with those of other students. Invite a speaker from a local industry to describe its uses of water.	Range of water use per urban dweller per day is 130-175 gallons. The specific breakdown is as follows: 50 + gallons: home use 50 " industry 10 " public needs 20 " commerce 10 " leaks, etc. Ninety percent of industry and commerce water is re-circulated, reused, and returned. All water use, added together, expressed in terms of each person: 1965: 1700 gallons/person/day 1980: 2283 " " " " " 2000: 2700 " " " " "
The source of water will vary depending upon its intended use.	Show the film *Good Riddance*, (Color - 29 min.) New York State Health Department.	Examples of water sources are: streams, lakes, cisterns, deep wells, springs, and desalination.

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEME FO
3. protection of water	Water for drinking purposes needs to be protected from contamination and pollution both before and after treatment.	Discuss and consider methods used to protect water. - How is it protected after purification?	Sanitary tended t of whol Frequen most im a sanit are: (1 (2) che (3) mic (4) radi
		Invite to class a representative of the water department to discuss the problem of maintaining safe water.	
		Visit a water filtration plant.	Example tecting include tation C State Co ment, Co Public W Cities, District Departme Environm Departme
	The testing of well water for every individual well is required.	Find out how your community monitors its public water supply to ensure that it does not become polluted.	
	Public water supplies are continually monitored by professional personnel.		
	Chemical analysis for impurities is available in most areas through the Public Health Department.	Define what is meant by polluted water. When does your community determine when a source is considered polluted? Identify the pollutants usually found in polluted water.	See the *Public H State Re Engineer* Bureau (
		Visit the local water filtration plant, or ask the plant manager to speak to the class.	

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
Water for drinking purposes needs to be protected from contamination and pollution both before and after treatment.	Discuss and consider methods used to protect water. - How is it protected after purification? Invite to class a representative of the water department to discuss the problem of maintaining safe water. Visit a water filtration plant.	Sanitary analysis is intended to furnish evidence of wholesomeness of water. Frequency of analysis is most important. Parts of a sanitary water analysis are: (1) physical tests, (2) chemical tests, (3) microscopic tests, (4) radiological tests. Examples of agencies protecting water supplies include: Interstate Sanitation Commission, New York State Conservation Department, County Department of Public Works, Villages, Cities, Towns and Special Districts, County Health Department, New York State Environmental Conservation Department.
The testing of well water for every individual well is required. Public water supplies are continually monitored by professional personnel. Chemical analysis for impurities is available in most areas through the Public Health Department.	Find out how your community monitors its public water supply to ensure that it does not become polluted. Define what is meant by polluted water. When does your community determine when a source is considered polluted? Identify the pollutants usually found in polluted water. Visit the local water filtration plant, or ask the plant manager to speak to the class.	See the *Directory of Local Public Health Engineers and State Regional Sanitary Engineers* - Water Resources Bureau (Albany).

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUP
	A number of agencies exist both for the cleanup of existing pollution and the prevention of new pollution.	Make a chart showing the various local, State, and Federal agencies concerned with preventing and controlling water pollution. Visit some of these agencies, or ask representatives to come and speak on their role in the prevention of water pollution. Discuss how government, by creating these agencies and the laws concerning their duties, can be effective in ending water pollution. Discuss how lobbies, in the interest of industries and other groups, prevent or delay effective legislation.	
4. sources of pollution	There are several major sources of water pollution in New York State including domestic, industrial, and nuclear weapons testing fallout. Domestic sources are a primary factor in water pollution.	Use microscopes to examine water from suspected sources of pollution and from known polluted waters. Have pupils collect water samples from various sources and send to the county lab for analysis.	Indu the prog tion Some wate 1. d a g a

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
A number of agencies exist both for the cleanup of existing pollution and the prevention of new pollution.	Make a chart showing the various local, State, and Federal agencies concerned with preventing and controlling water pollution. Visit some of these agencies, or ask representatives to come and speak on their role in the prevention of water pollution. Discuss how government, by creating these agencies and the laws concerning their duties, can be effective in ending water pollution. Discuss how lobbies, in the interest of industries and other groups, prevent or delay effective legislation.	
There are several major sources of water pollution in New York State including domestic, industrial, and nuclear weapons testing fallout. Domestic sources are a primary factor in water pollution.	Use microscopes to examine water from suspected sources of pollution and from known polluted waters. Have pupils collect water samples from various sources and send to the county lab for analysis.	Industry has recognized the problems and is making progress toward water pollution abatement. Some pollutants added to the water as it is used include: 1. domestic wastes, such as human waste, detergents, household grease and oils, etc.

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEM F
	As the numbers of people increase, the pollution of the total environment increases. As desire for ease and plenty grows, and as the need for life to be declines... difficult, luxury and non-essential manufacturing adds to the problem.	Have students research the causes of water pollution in general: . follow newspaper articles . read magazine articles . radio and tv reports . observations Visit a local sewage treatment plant, and watch especially to see if the effluent is capable of causing pollution problems. Prepare a display diagram showing the role of the individual, industry, and the community in causing water pollution. Interpret changes in civilization that have contributed to water contamination in your community. Conduct a class discussion regarding the types of water pollution students have encountered. How can these conditions be connected? What can students do?	2. indu cial oils lies lubr meta 3. silt lize (ins herb are of v resu whic and Some of tributi tion ar 1. treme popu comm ties 2. rapi deve crea synt 3. lack ment date 4. grea 5. man' lack and 6. indus resp retu maint ment

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
As the numbers of people increase, the pollution of the total environment increases. As desire for ease and plenty grows, and as the need for life to be declines... difficult, luxury and non-essential manufacturing adds to the problem.	Have students research the causes of water pollution in general: . follow newspaper articles . read magazine articles . radio and tv reports . observations Visit a local sewage treatment plant, and watch especially to see if the effluent is capable of causing pollution problems. Prepare a display diagram showing the role of the individual, industry, and the community in causing water pollution. Interpret changes in civilization that have contributed to water contamination in your community. Conduct a class discussion regarding the types of water pollution students have encountered. How can these conditions be connected? What can students do?	2. industrial and commercial wastes, such as oils, chemicals, alkalies, dyes, detergents, lubricants, grit, and metals. 3. silt, nitrates, fertilizers, pesticides (insecticides and herbicides), and manure are agricultural losses of valuable products resulting from practices which permit erosion and run-off. Some of the factors contributing to water pollution are: 1. tremendous growth of population, industry, commerce, and municipalities 2. rapid technological developments, e.g., increased use of chemicals, synthetics, pesticides 3. lack of adequate treatment facilities — outdated or inadequate 4. greater demand for water 5. man's carelessness and lack of consideration and lack of values 6. industry's lack of responsibility in returning some profits to maintaining the environment

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPL
			7. al (r re an
			8. go de de
			9. to ne pr st fo
5. effects of water pollution	Water pollution, and the subsequent shortage of clean water, affects the everyday life of all persons regardless of interests, needs,or where they may live,in the following ways: . health . recreation . economy . beauty Water for human purposes must meet minimum physical, chemical, and bacteriological standards in order to be safe.	Invite a speaker from industry or the department of public works to discuss pollution problems and solutions for your community. Listen to and discuss Pete Seeger's water pollution song. What is its meaning for your community? Have a representative of the conservation department visit your class and discuss how water pollution affects wildlife. Survey your community to determine the effects of pollution on such things as recreation, wildlife and fish, water supply for homes and industries, health, property values, etc. How can you improve conditions? How much do students contribute to water pollution?	How w each 1. Th lu ta an mi 2. In co fo 3. It va fr in ho 4. It ex ne op 5. It ti sw ar Wi cr ea

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
		7. allowing fresh water (rain) to mix with already contaminated earth and water 8. governmental inadequacy, delay or hesitancy in dealing with polluters 9. too-quick marketing of new substances without proper testing, understanding, control, or forethought
Water pollution, and the subsequent shortage of clean water, affects the everyday life of <u>all</u> persons regardless of interests, needs,or where they may live,in the following ways: . health . recreation . economy . beauty Water for human purposes must meet minimum physical, chemical, and bacteriological standards in order to be safe.	Invite a speaker from industry or the department of public works to discuss pollution problems and solutions for your community. Listen to and discuss Pete Seeger's water pollution song. What is its meaning for your community? Have a representative of the conservation department visit your class and discuss how water pollution affects wildlife. Survey your community to determine the effects of pollution on such things as recreation, wildlife and fish, water supply for homes and industries, health, property values, etc. How can you improve conditions? How much do students contribute to water pollution?	How water pollution affects each person: 1. Threat to health. Polluted water may be contaminated with viruses and bacteria that transmit scores of diseases. 2. Increased costs. It costs each person more for purification. 3. It lowers property values, making water frontage a liability instead of an asset to homeowners. 4. It discourages industrial expansion. Industry needs clean water to operate. 5. It discourages recreational areas. Boating, swimming, and fishing are clean-water sports. With our population increasing in numbers each year, we need more,

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLE
		Discuss the consequences of a dwindling potable water supply. Invite a representative from a county health agency or a doctor to discuss how polluted water can affect the health of the people in the community. Show the film, *The water around us*. Have a committee write to local industries to request information on their efforts to safely dispose of industrial wastes. Have students write letters to legislators indicating how they feel about water pollution, particularly with reference to local problems. Inquire as to what is being done and what is planned. Organize and publicize cleanup projects in recreation water areas. Make posters and displays concerning the need to avoid pollution practices and display them in your school and community. Write letters to your local newspaper calling attention to water pollution problems in the area.	not rec 6. It li fis lut Sta 7. It The of neg our

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	Discuss the consequences of a dwindling potable water supply. Invite a representative from a county health agency or a doctor to discuss how polluted water can affect the health of the people in the community. Show the film, *The water around us*. Have a committee write to local industries to request information on their efforts to safely dispose of industrial wastes. Have students write letters to legislators indicating how they feel about water pollution, particularly with reference to local problems. Inquire as to what is being done and what is planned. Organize and publicize cleanup projects in recreation water areas. Make posters and displays concerning the need to avoid pollution practices and display them in your school and community. Write letters to your local newspaper calling attention to water pollution problems in the area.	not fewer, areas for recreation. 6. It kills fish and wildlife. Thousands of fish are killed by pollution in New York State each year. 7. It robs us of beauty. The stench and ugliness of pollution is waste, neglect, and abuse of our heritage.

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPL
	There have been many laws passed, beginning in 1800's, in the United States to protect the quality of our waters.	Have the class study the list of key Federal laws protecting our waters. - Have these laws been successful in preventing pollution? Explain. - Should new laws be passed? Why? - How can youth become more involved in protecting our waters from pollution?	See of th Feder
B. Sewage treatment	Proper treatment of sewage is necessary for each community for the prevention of disease, maintenance of health, and prevention of environmental pollution. The primary purpose in treating sewage is to prevent the spread of disease among humans. The secondary purpose is to protect the general environment from pollution.	Visit a sewage treatment plant in your community. - Describe the stages the sewage goes through for treatment. - What are some of the major problems in treating this sewage? Are these new problems? - Is this a primary, secondary, or tertiary treatment plant? Explain why. Is it adequate treatment? - How does local industry prevent water pollution from its waste?	Sewag from sourc "oxi oxyge leng chem dati is k (Biol
	The treatment of sewage is directed toward solid matter, liquids, and bacteria. Municipal treatment of sewage may vary from simple removal of solid waste to complete purification.	Develop a chart or diagram of the typical sewage treatment process. Explain each stage. Write a paper on how our streams, lakes, and rivers	The direc facto suspe matte (3) pens

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
There have been many laws passed, beginning in 1800's, in the United States to protect the quality of our waters.	Have the class study the list of key Federal laws protecting our waters. - Have these laws been successful in preventing pollution? Explain. - Should new laws be passed? Why? - How can youth become more involved in protecting our waters from pollution?	See Appendix C for a listing of the key events in the Federal clear water programs.
Proper treatment of sewage is necessary for each community for the prevention of disease, maintenance of health, and prevention of environmental pollution. The primary purpose in treating sewage is to prevent the spread of disease among humans. The secondary purpose is to protect the general environment from pollution.	Visit a sewage treatment plant in your community. - Describe the stages the sewage goes through for treatment. - What are some of the major problems in treating this sewage? Are these new problems? - Is this a primary, secondary, or tertiary treatment plant? Explain why. Is it adequate treatment? - How does local industry prevent water pollution from its waste?	Sewage is the liquid wastes from household and commercial sources. Sewage must be "oxidized." The quantity of oxygen required in a given length of time to satisfy the chemical and biological oxidation demands of the sewage is known as the B.O.D. (Biological Oxygen Demand).
The treatment of sewage is directed toward solid matter, liquids, and bacteria. Municipal treatment of sewage may vary from simple removal of solid waste to complete purification.	Develop a chart or diagram of the typical sewage treatment process. Explain each stage. Write a paper on how our streams, lakes, and rivers	The treatment of sewage is directed toward five factors: (1) solids in suspension, (2) organic matter in suspension, (3) inorganic matter in suspension, (4) organic matter

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLE
	Disposal of human waste will continue to become an increasing problem as the population continues to increase.	can or have become open sewers.	in soli Primary involve solid of the where bacteri materia ment p in whi into c aerobi materia oxygen Chlorin contami destroy may re effluen some ki
C. Air and air pollution	Air pollution is the presence of substances in concentrations sufficient to interfere with the comfort, safety, or health of living things.	What is air pollution? Identify the factors which cause air pollution. Read accounts of what happened in one or more of the following cases: . Glasgow in 1901 . Glasgow in 1925 . The Meuse Valley of Belgium in 1930 . London in 1948, 1952 . Donora, Pennsylvania, in 1948 . New York in 1953, 1962, 1963, 1966, 1970	Air pol hazard people to mil of cost erty, w Air pol been ac nology, chiefly
	Air pollution may result from natural activities as well as from man's activities.	Conduct a class discussion of the natural types of	Natural polluti

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
Disposal of human waste will continue to become an increasing problem as the population continues to increase.	can or have become open sewers.	in solution, (5) bacteria. Primary treatment of sewage involves sedimentation of solid particles to the bottom of the clarifying tanks where action of anaerobic bacteria digest this material. Secondary treatment provides an environment in which the effluent comes into contact with air so that aerobic bacteria can oxidize material and thus reduce the oxygen demand of the sewage. Chlorine is used to decontaminate the effluent by destroying any bacteria that may remain. The final effluent is then poured into some kind of body of water.
Air pollution is the presence of substances in concentrations sufficient to interfere with the comfort, safety, or health of living things.	What is air pollution? Identify the factors which cause air pollution. Read accounts of what happened in one or more of the following cases: . Glasgow in 1901 . Glasgow in 1925 . The Meuse Valley of Belgium in 1930 . London in 1948, 1952 . Donora, Pennsylvania, in 1948 . New York in 1953, 1962, 1963, 1966, 1970	Air pollution is not only a hazard to the health of people but also contributes to millions of dollars of cost in damage to property, wildlife, and plants. Air pollution, which has been accelerated by technology, is concentrated chiefly in urban areas.
Air pollution may result from natural activities as well as from man's activities.	Conduct a class discussion of the natural types of	Natural sources of air pollution include fog, dust,

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUP
		air pollution that the students have encountered. Write to local and State health departments for information on natural pollutants. How does pollution aggravate allergic reactions?	sal pol
1. causes of air pollution	The increase in population, which results in increase in human activities, is the chief cause of air pollution -- "to live is to pollute."	Have students: 1. Make composite lists of air pollution sources, starting with their home, their neighborhood, then on to the community, the region, the country. 2. Make a study, possibly taking pictures, of the effects of cars and trucks on the air. 3. Make a study of their neighborhood, community, city, etc., listing industrial sources of pollution.	Sou to (1) ing fir tio shi pla and sol act
	Automobile exhaust is the chief offender regarding irritating smog. The dynamic growth of the U.S. economy has brought an accompanying increase in air pollution.	Develop posters for placement in the community that explain the sources of air pollution. Invite speakers from local and State health agencies, government, and industry to describe their problems with air pollution and possible solutions. Can students help? How? Why?	Eve mor of inc ann The pow Sta in wil nex

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	air pollution that the students have encountered. Write to local and State health departments for information on natural pollutants. How does pollution aggravate allergic reactions?	salt spray, volcanoes, and pollens.
The increase in population, which results in increase in human activities, is the chief cause of air pollution -- "to live is to pollute."	Have students: 1. Make composite lists of air pollution sources, starting with their home, their neighborhood, then on to the community, the region, the country. 2. Make a study, possibly taking pictures, of the effects of cars and trucks on the air. 3. Make a study of their neighborhood, community, city, etc., listing industrial sources of pollution.	Sources of pollution related to man's activities are (1) home -- heating, cooking, waste incineration and fireplaces; (2) transportation -- motor vehicles, ships, railroads, and airplanes; (3) manufacturing and processing -- gases, solids, and odors; (4) radio active emanations.
Automobile exhaust is the chief offender regarding irritating smog. The dynamic growth of the U.S. economy has brought an accompanying increase in air pollution.	Develop posters for placement in the community that explain the sources of air pollution. Invite speakers from local and State health agencies, government, and industry to describe their problems with air pollution and possible solutions. Can students help? How? Why?	Every year automobiles burn more than 70 billion gallons of gasoline and consumption increases by 4 percent annually. The amount of electric power produced in the United States has increased 50 fold in the last 50 years and will double again in the next decade. Four-fifths

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEM F
		Discuss changes in civilization that have contributed to air pollution.	of this duced b plants the air sulfur irritat taminan
		Use vacuum cleaners covered with filter paper to test the extent of air pollution in various parts of the community.	Each Am than 4 day. T method burning taminan best co
		Use this and information from various students to construct a community pollution map.	
		Refer to the laboratory manual: "Air Pollution: Experiments for Junior and Senior High School Science Classes." Air Pollution Control Association, 4400 5th Avenue, Pittsburgh, Pennsylvania 15213.	
	Air pollution may come from manufacturing processes which use chemicals as well as those which manufacture chemicals.		
		See: *The modern miasmas* published by Metropolitan Life Insurance Company.	Source: Your Com Departme tion and tion #15

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	Discuss changes in civilization that have contributed to air pollution.	of this electricity is produced by fuel-burning power plants which discharge into the air millions of tons of sulfur dioxide, a highly irritating and harmful contaminant.
	Use vacuum cleaners covered with filter paper to test the extent of air pollution in various parts of the community.	Each American produces more than 4 pounds of rubbish per day. The most prevalent method of disposal is burning, which produces contaminants even under the best conditions.
	Use this and information from various students to construct a community pollution map.	
	Refer to the laboratory manual: "Air Pollution: Experiments for Junior and Senior High School Science Classes." Air Pollution Control Association, 4400 5th Avenue, Pittsburgh, Pennsylvania 15213.	
Air pollution may come from manufacturing processes which use chemicals as well as those which manufacture chemicals.		
	See: *The modern miasmas* published by Metropolitan Life Insurance Company.	Source: "Clean Air for Your Community." U.S. Department of Health, Education and Welfare. Publication #1544.

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPL
	Critical air pollution episodes are often the result of weather conditions that result in a "thermal inversion."	Contact local health department, weather station, or air pollution center to find out about air pollution problems in your community. Compare this information with your observations.	Ordin cause surfa upper conce becom stabl therm The u air i in th forms colde surfa tants
2. effects of air pollution	Man's health is dependent upon the availability of clean air.		In di world State have air.
	Polluted air may have immediate as well as long-range effects on man's health.	Compare the respiratory disease rates in geographic areas which have low levels of air pollution with those of high levels of pollutants. (Consult with the local health officer for data.)	So fa cerne ordin air p but r tion of de icate plica
	The effects of air pollutants on the health of an individual include respiratory conditions, irritation of the mucous membranes, gastrointestinal disturbance, and circulatory conditions.	Have students identify the specific health conditions which may result from air pollution.	does in sm effec pinpo show creas such

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
Critical air pollution episodes are often the result of weather conditions that result in a "thermal inversion."	Contact local health department, weather station, or air pollution center to find out about air pollution problems in your community. Compare this information with your observations.	Ordinarily, air movement causes a dispersal of warm surface air into the colder upper atmosphere where the concentration of contaminants becomes diluted. With stable weather conditions, a thermal inversion occurs. The usual stratification of air is reversed. Warm air in the upper atmosphere forms like a lid over the colder air near the earth's surface, preventing pollutants from rising.
Man's health is dependent upon the availability of clean air.		In different parts of the world, as well as the United States, illness and death have resulted from polluted air.
Polluted air may have immediate as well as long-range effects on man's health.	Compare the respiratory disease rates in geographic areas which have low levels of air pollution with those of high levels of pollutants. (Consult with the local health officer for data.)	So far as health is concerned, the effects of ordinary concentrations of air pollutants are subtle, but real. While air pollution never appears as a cause of death on a death certificate, medical research implicates it. Polluted air does its damage slowly and in small doses, so that its effects are difficult to pinpoint. But statistics show a steady, steep increase in the incidence of such respiratory diseases
The effects of air pollutants on the health of an individual include respiratory conditions, irritation of the mucous membranes, gastrointestinal disturbance, and circulatory conditions.	Have students identify the specific health conditions which may result from air pollution.	

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEM F
			as asth emphyse the di greates disease
	Air pollution causes severe economic losses in terms of property damage.	Develop a bulletin board display with regard to air pollution locally. Include: . Effects on health . Sources of pollution . Programs underway . Damage to property . Economic loss	Pollute annoyan sills, dingy s luted a economi must be frequen draperi wear ou die.
		Invite a representative from the Environmental Conservation Department to discuss the effects of pollution of all kinds on plant and wildlife.	Some lo dent. out fas rust mo ware is nished. the nea be dama urban a
3. prevention and control of air pollution	It is urgent that all communities recognize early their air pollution problems and potentials and begin steps to prevent or alleviate them.	Have students "invent" devices or methods they think will help to alleviate or to prevent further pollution of the air.	Air pol have tw 1. Cont sour inst equi luta leas 2. Prev of p

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
		as asthma, bronchitis, and emphysema. Urban areas with the dirtiest air have the greatest incidence of these diseases.
Air pollution causes severe economic losses in terms of property damage.	Develop a bulletin board display with regard to air pollution locally. Include: . Effects on health . Sources of pollution . Programs underway . Damage to property . Economic loss	Polluted air brings constant annoyances - dirty window-sills, gritty skin, and dingy surroundings. Polluted air also results in economic losses. Houses must be repainted more frequently, clothing and draperies get dirty and wear out sooner, and plants die.
	Invite a representative from the Environmental Conservation Department to discuss the effects of pollution of all kinds on plant and wildlife.	Some losses are less evident. Tires crack and wear out faster. Iron and steel rust more quickly. Silverware is perpetually tarnished. Even miles from the nearest city, crops may be damaged by air from urban areas.
It is urgent that all communities recognize early their air pollution problems and potentials and begin steps to prevent or alleviate them.	Have students "invent" devices or methods they think will help to alleviate or to prevent further pollution of the air.	Air pollution controls must have two major aims: 1. Control of (old) current sources of pollution by installation of necessary equipment to prevent pollutants from being released into the air. 2. Prevention of new sources of pollution by standards

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	Air pollution and abatement activities are being conducted by public and private health agencies, and by groups of concerned citizens.	Have students find out the State and local ordinances which pertain to air pollution. - Are they enforced? - How are they enforced? - Are these single efforts to conform, or are several factions of the community cooperating?
	Because air movement is not confined within the borders of cities, counties, and states, air pollution control necessarily involves widespread cooperation.	Investigate and make a list of all the agencies, public and private, concerned with air pollution. Show the film, *Air pollution - everyone's problem.*
	The Clean Air Act authorized the use of Federal grant funds to help meet the costs of establishing, developing, or improving control programs in states and cities.	

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		that require air pollution control devices in new factories, industries, etc.
Air pollution and abatement activities are being conducted by public and private health agencies, and by groups of concerned citizens.	Have students find out the State and local ordinances which pertain to air pollution. - Are they enforced? - How are they enforced? - Are these single efforts to conform, or are several factions of the community cooperating?	Agencies: 1. Local In New York State, Action for Clean Air Committees on the local level are organizing to combat air pollution. 2. State The New York State Department of Environmental Conservation and various representative air pollution organizations from surrounding states are cooperatively working for the abatement of air pollution. 3. Federal The Federal government through the Clean Air Act provides assistance to State and local governments for abatement of air pollution activities.
Because air movement is not confined within the borders of cities, counties, and states, air pollution control necessarily involves widespread cooperation.	Investigate and make a list of all the agencies, public and private, concerned with air pollution. Show the film, *Air pollution - everyone's problem.*	
The Clean Air Act authorized the use of Federal grant funds to help meet the costs of establishing, developing, or improving control programs in states and cities.		Federal Clean Air Act The National Air Pollution Control Administration provides technical assistance to State and local agencies to resolve specific technical problems or to plan effective control programs. Some State agencies are in a

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPP
			posi same
	It is important for us to start thinking in terms of recovering and re-cycling more of the air polluting particles, gases, vapors, and fumes.	Visit a local power generating station and determine the rate of flow of gases in the stack, exit temperature, and the percent content of sulfur dioxide. Compute loss of SO_2 per year. Discuss: Will our wastefulness result in a denuded planet for earth's inhabitants to inherit 1,000, or 100 years from now?	Our make abou part but conc not ly.
	Conservation now is important to the health, well being, and prosperity of the earth's future inhabitants.		Reco woul of m for gene of s be r as s ½ po in t gene The also kind powe the Educ init

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
		position to provide this same form of assistance.
It is important for us to start thinking in terms of recovering and re-cycling more of the air polluting particles, gases, vapors, and fumes.	Visit a local power generating station and determine the rate of flow of gases in the stack, exit temperature, and the percent content of sulfur dioxide. Compute loss of SO_2 per year. Discuss: Will our wastefulness result in a denuded planet for earth's inhabitants to inherit 1,000, or 100 years from now?	Our present technology makes it possible to recover about 99 percent of particles in a gas stream, but some gases, unless in concentrated mixtures, cannot be recovered economically.
Conservation <u>now</u> is important to the health, well being, and prosperity of the earth's future inhabitants.		Recovery and re-cycling would permit conservation of many natural resources for the use of future generations. Every pound of sulfur dioxide that can be recovered and recycled as sulfuric acid will leave ½ pound of elemental sulfur in the earth for future generations. The Federal Clean Air Act also provided for certain kinds of Federal control power. The Secretary of the Department of Health, Education, and Welfare may initiate control action, for

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			exa in the per Thi ten of men of dif met
			An Cle con new beg
D. Solid wastes	Solid wastes include such things as garbage, paper containers, metal containers, plastic containers, and all those things which man has used and no longer wishes to retain.	Show and discuss the film, *The day they burned the dump*.	As hav bee the tai dis tha has
		Show the film, *A survey of refuse disposal methods*.	In con was som of
	The responsibility of controlling refuse disposal and assuring proper handling in the communities lies in the hands of certain agencies, with cooperation of community members.	Have students do a survey of their community to find out sources of solid waste. Canvass stores, businesses, industries, and homes.	Majo Garb was . Co -

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
		example, if pollution arises in one State and endangers the health or welfare of persons in another State. This Federal power is intended to supplement that of State and local governments by providing a means of resolving problems of difficult interstate metropolitan areas. An amendment to the Federal Clean Air Act also authorized control of emissions from new motor vehicles, beginning with 1968 models.
Solid wastes include such things as garbage, paper containers, metal containers, plastic containers, and all those things which man has used and no longer wishes to retain.	Show and discuss the film, *The day they burned the dump*.	As society and technology have developed there has been a great increase in the use of throwaway containers, paper, plastic disposal items, etc., so that the volume of rubbish has mushroomed.
	Show the film, *A survey of refuse disposal methods*.	In order to find a way to control and handle disposal wastes, we must first have some idea of the sources of these wastes.
The responsibility of controlling refuse disposal and assuring proper handling in the communities lies in the hands of certain agencies, with cooperation of community members.	Have students do a survey of their community to find out sources of solid waste. Canvass stores, businesses, industries, and homes.	<u>Major classes of refuse</u>: Garbage: food and market wastes . Combustible rubbish - paper

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		Estimate the percentage of the community's total tonnage that each of the sources represents, and record the types of wastes each contributes.	- ca - bo - tr - le - pl . nonc - me - ti - bo - as
		Find out who is responsible for refuse removal and disposal in your community. Investigate the approximate total tonnage of refuse per year for your community, and work this out on a per capita basis. If records are available, do the same thing for, say, 1950 and 1940. Discuss the implications of the results.	Method garbag 1. pub ser dep 2. pri con loc A parti proble tainers tainer of redu solid w Aluminu glass c Glass, been cr road co
	One substantial problem facing us in the future is that of space travel and disposal of wastes in space.	Discuss: Why the space environment is considered hostile to man. Write to NASA for *NASA fact sheets*, and for specific information on	Obtain nautics tration *Facts*, backgro structu vironme

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	Estimate the percentage of the community's total tonnage that each of the sources represents, and record the types of wastes each contributes.	- cartons - boxes - tree branches - leaves - plastics . noncombustible rubbish - metal - tin cans - bottles - ashes
	Find out who is responsible for refuse removal and disposal in your community. Investigate the approximate total tonnage of refuse per year for your community, and work this out on a per capita basis. If records are available, do the same thing for, say, 1950 and 1940. Discuss the implications of the results.	Methods of collection of garbage and refuse: 1. public - community service; public works department 2. private - private agency; contractor (licensed by local government) A partial solution to the problem is to reuse containers or recycle container materials as a means of reducing the amount of solid waste for disposal. Aluminum, steel, paper, and glass can all be recycled. Glass, for example, has been crushed for use as a road construction material.
One substantial problem facing us in the future is that of space travel and disposal of wastes in space.	Discuss: Why the space environment is considered hostile to man. Write to NASA for *NASA fact sheets*, and for specific information on	Obtain from National Aeronautics and Space Administration the pamphlet *NASA Facts*, Vol. III, No. 5, for background material on structuring of a closed environment in space travel.

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLE
		the problems of traveling in a closed system. Discuss: a. How will man react to conditions of a closed system, e.g. close confinement, long periods of solitude and weightlessness. Investigate possible systems for recycling of waste products and reuse of raw materials. See various NASA fact sheets. Discuss why, in many cases, man has felt it necessary to leave debris in space. Use example of lunar landings, and the discarding of a whole vehicle. Discuss how this practice might affect future space travel, endangering other missions. Invite a NASA representative to discuss how this problem might be solved.	Space differ 1. Whe in mus sys of pro the clo 2. As som bec the equ sur a b ing an pro
E. Pesticides	In our society, the use of pesticides has become widespread in various forms of agriculture and animal husbandry. Intelligent use ensures an adequate supply of safe-to-eat, nutritious food for man and animal.	Have students compile a list of commonly used pesticides. Visit a feed and grain store. Invite a county agricultural agent to come and speak. Write to various county, Federal, or State agencies.	Defini Webste pest i which Theref term p priate chemi

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	the problems of traveling in a closed system. Discuss: a. How will man react to conditions of a closed system, e.g. close confinement, long periods of solitude and weightlessness. Investigate possible systems for recycling of waste products and reuse of raw materials. See various NASA fact sheets. Discuss why, in many cases, man has felt it necessary to leave debris in space. Use example of lunar landings, and the discarding of a whole vehicle. Discuss how this practice might affect future space travel, endangering other missions. Invite a NASA representative to discuss how this problem might be solved.	Space travel presents two different related problems: 1. When traveling in space in a closed system, there must be life support systems that take care of refuse disposal and provide for the needs of the organisms in the closed system. 2. As man travels in space, some of his equipment becomes useless. Thus, the disposal of this equipment on the lunar surface, in orbit around a body, or simply floating in space may become an eventual, serious problem.
In our society, the use of pesticides has become widespread in various forms of agriculture and animal husbandry. Intelligent use ensures an adequate supply of safe-to-eat, nutritious food for man and animal.	Have students compile a list of commonly used pesticides. Visit a feed and grain store. Invite a county agricultural agent to come and speak. Write to various county, Federal, or State agencies.	Definition: According to Webster's Dictionary, a pest is any plant or animal which is detrimental to man. Therefore, the use of the term pesticide will appropriately include the chemical compounds that

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLE
	There are real values as well as potential dangers involved in the use of pesticides.	Assemble and summarize current reports regarding pesticides from magazines and professional periodicals. Analyze their statements about the effects of pesticides on soil, crops, fruit, and humans.	serve fungi roden and g
	There is an increased concern by segments of our society about the possible contamination of livestock, vegetation, and natural resources by pesticides.	Invite a farmer who uses pesticides to come and explain to the class why he feels it is necessary to use them.	Contri and Nu A grea stuffs "seaso choice and fr around reduce goiter tion,
	Hazards to health may occur through: - accidental exposure - inhalation - ingestion	Investigate the current worldwide food shortage and the role that pesticides can play in increasing food production.	It is that c of hig with m case o agricu the po might other
	It is becoming increasingly clear that pesticides are a risk to animal and plant life, and, most important, to man.	Read *Silent spring* by Rachel Carson, or at least some significant portions of it, and discuss in class.	
		Read some scientific critiques of *Silent spring* and discuss.	Cautio 1. Con pes 2. Do cid 3. Rea ins 4. Be 5. Whe pro rem
		Refer to each of the following sources written by Louis Bromfield: - *From my experience* - *Pleasant valley* - *Malabar farm* - *Out of the earth*	

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
There are real values as well as potential dangers involved in the use of pesticides.	Assemble and summarize current reports regarding pesticides from magazines and professional periodicals. Analyze their statements about the effects of pesticides on soil, crops, fruit, and humans.	serve as - insecticides, fungicides, herbicides, rodenticides, fumigants, and general pesticides.
There is an increased concern by segments of our society about the possible contamination of livestock, vegetation, and natural resources by pesticides.	Invite a farmer who uses pesticides to come and explain to the class why he feels it is necessary to use them.	<u>Contribution to Agriculture and Nutrition</u>: A greater variety of foodstuffs, elimination of "seasonal foods" broad choice of meats, vegetables, and fruits the year around. This diversity has reduced incidence of endemic goiter, protein malnutrition, scurvy, and rickets.
Hazards to health may occur through: - accidental exposure - inhalation - ingestion	Investigate the current worldwide food shortage and the role that pesticides can play in increasing food production.	It is an acknowledged fact that chemical pesticides of high toxicity are used with more thought to the case of solving the immediate agricultural problems than the possible damage that might result to man and other life.
It is becoming increasingly clear that pesticides are a risk to animal and plant life, and, most important, to man.	Read *Silent spring* by Rachel Carson, or at least some significant portions of it, and discuss in class.	<u>Caution for use in home</u>: 1. Consider all household pesticides as poison. 2. Do not stockpile pesticides. 3. Read labels and follow instructions. 4. Be conservative in use. 5. When spraying, remove or protect all food, and remove pets from the area.
	Read some scientific critiques of *Silent spring* and discuss.	
	Refer to each of the following sources written by Louis Bromfield: - *From my experience* - *Pleasant valley* - *Malabar farm* - *Out of the earth*	

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLE
		Have a debate on the desirability of limiting the use of pesticides. (Before the debate have class develop criteria for judging soundness of facts.) After the debate, have students write a paragraph on whether or not they would permit the use of pesticides, and citing reasons for their positions.	6. We in 7. Do op 8. Do sp 9. Ba bo 10. Us sp Re
	The problem of control and restrictions on the use of pesticides remains extremely critical and unsolved.	Discuss: Can a compromise be made between widespread use and controlled use of pesticides? Have students, using ecological principles, devise a procedure for evaluating a pesticide before it is put into widespread use. Include a list of those characteristics which a pesticide must have in order to be effective and not harmful.	No on handl inher pesti gardi made knowl toxic fish ment, techn and m Recom teach *our e* Natio Pitts March Healt way, (Free

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	Have a debate on the desirability of limiting the use of pesticides. (Before the debate have class develop criteria for judging soundness of facts.) After the debate, have students write a paragraph on whether or not they would permit the use of pesticides, and citing reasons for their positions.	6. Wear a mask to prevent inhaling mist 7. Do not spray near an open flame. 8. Do not smoke while using spray. 9. Bathe exposed parts of body after spraying. 10. Use common sense when spraying. (Consumer Reports, July 1963)
The problem of control and restrictions on the use of pesticides remains extremely critical and unsolved.	Discuss: Can a compromise be made between widespread use and controlled use of pesticides? Have students, using ecological principles, devise a procedure for evaluating a pesticide before it is put into widespread use. Include a list of those characteristics which a pesticide must have in order to be effective and not harmful.	No one agency is able to handle the complex problems inherent in the use of pesticides. Decisions regarding their use must be made in the light of knowledge in public health, toxicology, agriculture, fish and wildlife management, forestry, water, farm technology, and soil science and management. Recommended reading for teachers: *Health needs in our environment*, 1964. National Health Forum, Pittsburgh, Pennsylvania, March 9-11. National Health Council, 1970 Broadway, New York, New York. (Free)

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLE
	Rats and other rodents are a major environmental health problem especially in the ghettos of our large cities. There is a constant and urgent need to be continuously alert to the extent and dangers of infestation by rats.	Suggested readings: *The Plague on us*, by Smith. Why is the control of rodents important? Identify the health hazards related to rodents. How are rodents exterminated in residences? How can we prevent their return? Use local Rodent Control personnel as speakers. Suggest or arrange clean-up via mass media or neighborhood councils. Visit the Health Department to determine program efforts; the responsible source of funds: local, State, Federal funds. Magazine - "Urban Society," published by high school students in Brooklyn may be a model for other student projects regarding surveys of housing problems, garbage, refuse problems, and rat problems, etc., in their own neighborhoods.	Refer tion" film a New Yo Depart Avenue Rodent belong rodent mice, vector from r of rat public Exampl transm Murine flea Buboni flea Weil's fect of r Salmon rat Rat bi via Ricket mous

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
Rats and other rodents are a major environmental health problem especially in the ghettos of our large cities.	Suggested readings: *The Plague on us*, by Smith.	Refer to "Rodent Education" -- Curriculum and film available from the New York State Health Department, 84 Holland Avenue, Albany, New York.
There is a constant and urgent need to be continuously alert to the extent and dangers of infestation by rats.	Why is the control of rodents important? Identify the health hazards related to rodents. How are rodents exterminated in residences? How can we prevent their return? Use local Rodent Control personnel as speakers. Suggest or arrange clean-up via mass media or neighborhood councils. Visit the Health Department to determine program efforts; the responsible source of funds: local, State, Federal funds. Magazine - "Urban Society," published by high school students in Brooklyn may be a model for other student projects regarding surveys of housing problems, garbage, refuse problems, and rat problems, etc., in their own neighborhoods.	Rodents include all animals belonging to the order rodentia - squirrels, rats, mice, prairie dogs. A vector transfers pathogens from rodent to man. Control of rats is important in public health practice. Examples of some diseases transmitted by rats are: Murine typhus: rat-rat-flea-man Bubonic plague: rat-rat-flea-man Weil's disease: (infectious jaundice) urine of rat Salmonelliosis: feces of rat and house mouse Rat bite fever: bacteria via bite Rickettsial pox: house mouse-mite-man

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPP
		Discuss career possibilities in sanitation/environmental control. Show and discuss the film: *Vandals of the night*. What is the extent of the rodent problem in our cities?	A co incl tion plac kill Offi cont . ed ac . ve . re ve . ma me . di pe Pers Sani rian work ogis logi
F. Noise pollution	Noise is any disturbing sound that may interfere with work, comfort, or rest. Sounds under certain conditions may be both physically and psychologically harmful, particularly when exposure is continuous.	Have students identify and describe occasions when sounds have been uncomfortable, unpleasant, or painful. - How does noise affect one's health? - How does noise affect the ear and hearing? - What effect does continuous noise have on the emotional and psychological behavior of people?	Deci rela is a resu vibr teri pitc tens See *Perc* *and*

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	Discuss career possibilities in sanitation/environmental control. Show and discuss the film: *Vandals of the night*. What is the extent of the rodent problem in our cities?	A community program should include: surveys, elimination of nesting and breeding places, ratproofing, killing of rats and mice. Official activities for control include: . educational/promotional activities . vector surveys . research with regard to vectors . materials and control measures . direct application of pesticides Personnel: Sanitary engineers, sanitarians, inspectors, laboratory workers, biologists, zoologists, chemists, entomologists, ecologists.
Noise is any disturbing sound that may interfere with work, comfort, or rest. Sounds under certain conditions may be both physically and psychologically harmful, particularly when exposure is continuous.	Have students identify and describe occasions when sounds have been uncomfortable, unpleasant, or painful. - How does noise affect one's health? - How does noise affect the ear and hearing? - What effect does continuous noise have on the emotional and psychological behavior of people?	Decibels are used to measure relative loudness. Noise is a discordant sound which results from nonperiodic vibrations of air. Characteristics of a sound include: pitch, quality, and intensity. See *Strand I, Sensory Perception, grades 7, 8, and 9* for a more complete

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	The background noise level, particularly for our cities, has been steadily increasing as our technology has increased. The deleterious effect of excessive noise from our environment requires that new ways to reduce noise levels be created.	- How does noise affect the fatigue level of people? Discuss the changes in our society that have produced these increases in noise level in our environment. Find out whether your community has any ordinances concerning noise, and if so, what are they? List ways in which noise levels in the school and at home can be lowered.	descrip nature. 21 for Prevent noise p (1) sur (2) imp methods use of equipme selecti (5) car
V. Public Health Practice in the Prevention and Control of Disease	Many diseases can be prevented and controlled if each individual practices certain basic health procedures. Some diseases require group action to effectively control or prevent them.	Have students identify diseases which at one time may be quite personal but at other times may threaten or become a public health concern.	The tea to *Stra vention* 3-5 for ecologi disease discuss pages 8 relativ disease basic c the deg
A. Communicable disease control	Public health measures to prevent communicable diseases may be either very general (sanitation practices) or specific (immunization procedures).	Describe the kinds and frequency of public health programs provided in your community during the past year to help to prevent or control communicable diseases.	The emp is plac public able or disease society. *Strand World H* importa

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
The background noise level, particularly for our cities, has been steadily increasing as our technology has increased. The deleterious effect of excessive noise from our environment requires that new ways to reduce noise levels be created.	- How does noise affect the fatigue level of people? Discuss the changes in our society that have produced these increases in noise level in our environment. Find out whether your community has any ordinances concerning noise, and if so, what are they? List ways in which noise levels in the school and at home can be lowered.	description of sound and its nature. See pages 20 and 21 for teacher references. Prevention and control of noise pollution include: (1) survey of noise, (2) improved engineering methods, (3) development and use of personal protective equipment, (4) proper selection of personnel, and (5) careful city planning.
Many diseases can be prevented and controlled if each individual practices certain basic health procedures. Some diseases require group action to effectively control or prevent them.	Have students identify diseases which at one time may be quite personal but at other times may threaten or become a public health concern.	The teacher should refer to *Strand I, Diseases Prevention and Control*, pages 3-5 for a discussion of the ecological relationships of disease; pages 6-7 for a discussion of epidemiology; pages 8-14 for basic content relative to communicable disease; and page 14 for basic concepts related to the degenerative diseases.
Public health measures to prevent communicable diseases may be either very general (sanitation practices) or specific (immunization procedures).	Describe the kinds and frequency of public health programs provided in your community during the past year to help to prevent or control communicable diseases.	The emphasis in this strand is placed on community or public health action available or required to alleviate disease conditions in our society. Refer also to *Strand IV, Human Ecology and World Health* for these important interrelationships.

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLE
	Although the communicable diseases are being replaced by the chronic and degenerative diseases, they continue to be major public health problems.	Identify, in order of importance, the major communicable diseases which are public health problems in the United States. - Are these also major public health problems in other parts of the world? Explain. - What kinds of changes have occurred in the past 10 years? 20 years? Why? - What part do the following health sciences play in their control? . Bacteriology . Immunology . Epidemiology . Pharmacology	Accord *Health* *living* detect favora the ho agent vironm 287-28 descri of dis
B. Chronic and degenerative diseases	The chronic and degenerative diseases constitute the leading causes of death in the United States. The chronic diseases are a significant cause of disability.	What are some of the public health implications with regard to the increase in the numbers of cases of degenerative diseases? Identify and describe the five major chronic diseases in the United States. - Whom do they affect mainly? - Are they primarily disabling or leading causes of death? Obtain statistics of the leading causes of death	Johns, compar causes United 1963 o figure may be New Yo of Hea Chroni define genera effect disabl lesser progre age.

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
Although the communicable diseases are being replaced by the chronic and degenerative diseases, they continue to be major public health problems.	Identify, in order of importance, the major communicable diseases which are public health problems in the United States. - Are these also major public health problems in other parts of the world? Explain. - What kinds of changes have occurred in the past 10 years? 20 years? Why? - What part do the following health sciences play in their control? . Bacteriology . Immunology . Epidemiology . Pharmacology	According to Johns, et al, *Health for effective living*, "Disease is the detectable result of the unfavorable equilibrium between the host and the disease agent in a particular environment." See pages 287-289 for a more complete description of the nature of disease.
The chronic and degenerative diseases constitute the leading causes of death in the United States. The chronic diseases are a significant cause of disability.	What are some of the public health implications with regard to the increase in the numbers of cases of degenerative diseases? Identify and describe the five major chronic diseases in the United States. - Whom do they affect mainly? - Are they primarily disabling or leading causes of death? Obtain statistics of the leading causes of death	Johns, et al, provide a comparison table for leading causes of death in the United States for 1900 and 1963 on page 333. Latest figures for New York State may be obtained through the New York State Department of Health. Chronic diseases are simply defined as those which generally have a long-term effect, are permanent, are disabling to a more or lesser degree, or become progressively worse with age. These diseases

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEM F
		50 years ago and compare with those of today. - What kinds of changes have occurred? Why?	may occ are usu the agi "aging intensi fields which i aging p (2) ger concern tions, common
	Geriatrics is the branch of medicine which concerns itself with the aging process and the diseases most common to old age.	Show and discuss the following films available through the New York State Department of Health Film Library: - *Allergies* - *The quest* - *Heart disease: its major causes*	Any lis constit erative clude t 1. Card dise hear and 2. Canc clud kind vary comm 3. Diab 4. The incl gout 5. Cert tory emph bron 6. Alle kind 7. A wh whic
		Invite the public health commissioner to class to discuss the changing role of public health from the control of communicable diseases to the chronic and degenerative diseases. - Why are chronic diseases more of a problem today than 50 years ago? - At what age do most of these diseases make their appearance? - Is there anything people can do while young to prevent these diseases? - What does the future hold for people in relation to longevity and disease? - Does the nature of our thoughts over a lifetime bear any relationship to disease and health in	

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	50 years ago and compare with those of today. - What kinds of changes have occurred? Why?	may occur at any age but are usually associated with the aging process. Our "aging population" has intensified research in the fields of (1) gerontology, which is concerned with the aging process, and (2) geriatrics, which is concerned with the conditions, especially diseases, common to the aged.
Geriatrics is the branch of medicine which concerns itself with the aging process and the diseases most common to old age.	Show and discuss the following films available through the New York State Department of Health Film Library: - *Allergies* - *The quest* - *Heart disease: its major causes*	Any listing of the chronic, constitutional, or degenerative diseases will include the: 1. Cardiovascular-renal diseases which include heart attacks, strokes, and nephritis 2. Cancer. This would include several different kinds of cancer with varying, as well as common, characteristics. 3. Diabetes mellitus 4. The rheumatoid diseases, including arthritis and gout 5. Certain chronic respiratory diseases, such as emphysema and chronic bronchitis 6. Allergic reactions of all kinds 7. A whole host of diseases which affect the nervous
	Invite the public health commissioner to class to discuss the changing role of public health from the control of communicable diseases to the chronic and degenerative diseases. - Why are chronic diseases more of a problem today than 50 years ago? - At what age do most of these diseases make their appearance? - Is there anything people can do while young to prevent these diseases? - What does the future hold for people in relation to longevity and disease? - Does the nature of our thoughts over a lifetime bear any relationship to disease and health in	

OUTLINE OF CONTENT	MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEM F
		later life; are happy thoughts better for our long-term physical health than sour thoughts? Explain!	syst syst incl and Figures do not extent problem disease to meas kinds a sufferi which e here th needs t the fut

MAJOR UNDERSTANDINGS AND FUNDAMENTAL CONCEPTS	SUGGESTED TEACHING AIDS AND LEARNING ACTIVITIES	SUPPLEMENTARY INFORMATION FOR TEACHERS
	later life; are happy thoughts better for our long-term physical health than sour thoughts? Explain!	system and the muscular systems. Examples would include multiple sclerosis and epilepsy. Figures related to mortality do not reflect the real extent of the public health problems related to these diseases. One must attempt to measure or conceive the kinds and amounts of human suffering and disability which exists. It is probably here that public health needs to address itself in the future.

APPENDIX A

Community Clean Air Checklist

Even problems of air pollution which require a regional or a national approach are depen
For this reason every clean air program must start with the question: Is my community doin
pollution?

The United States Public Health Service reports that every area with a population over 5
smaller communities, have polluted air. But this doesn't tell the complete story. A tiny to
nuisance in or near it can have pollution problems just as severe as those of the large metro

Each community must wage the fight for clean air on many fronts. The following question
serve as a checklist:

CHECKLIST	COMMENT
1. Is there an air pollution control agency and a pollution control ordinance?	1. Such an ordinance should provi of pollution sources and the e should be adequately staffed a
2. Is the community monitoring the quality of its air?	2. More than 200 municipalities k levels of pollutants in the ai stations of the National Air P Administration's National Air Other cities have equipment th information about air quality.
3. Does the community have air quality standards and goals?	3. Each geographic area of New Yo classified as to the air quali achieved. Limits have been se of suspended and settleable pa sulfur dioxide, hydrogen sulfi oxidants – and for fluorides in for cattle. (See Part 501, Am Standards - Classification Sys
4. Do major users of heavy fuel oil and coal use control devices to reduce the emission of smoke and soot?	4. Modern controls can keep up to particulate matter out of the are mandatory in many areas.

APPENDIX A

Community Clean Air Checklist

air pollution which require a regional or a national approach are dependent on local action. clean air program must start with the question: Is my community doing enough about air

s Public Health Service reports that every area with a population over 50,000, and many have polluted air. But this doesn't tell the complete story. A tiny town with a large t can have pollution problems just as severe as those of the large metropolis.

ust wage the fight for clean air on many fronts. The following questions are intended to

CHECKLIST	COMMENT
ollution control agency and a ordinance?	1. Such an ordinance should provide for adequate control of pollution sources and the enforcement agency should be adequately staffed and financed.
monitoring the quality of its	2. More than 200 municipalities keep informed about the levels of pollutants in the air through local stations of the National Air Pollution Control Administration's National Air Surveillance Network. Other cities have equipment that gives more detailed information about air quality.
y have air quality standards	3. Each geographic area of New York State has been classified as to the air quality which must be achieved. Limits have been set on permissible levels of suspended and settleable particulate matter – sulfur dioxide, hydrogen sulfide, carbon monoxide, oxidants – and for fluorides in air and in forage for cattle. (See Part 501, Ambient Air Quality Standards - Classification System.)
heavy fuel oil and coal use o reduce the emission of smoke	4. Modern controls can keep up to 99 percent of particulate matter out of the air. These controls are mandatory in many areas.

CHECKLIST	COMMENT
5. Are actual and potential industrial emissions under regulation?	5. In many cases, careful supervis by industry can keep the emissi industrial equipment to a livea new equipment is installed, loc review the plans to ensure that control devices and techniques
6. Are there regulations controlling the installation of new residential and business equipment that may cause pollution?	6. Home furnaces and incinerators, ment and boilers, and other suc be inspected by pollution contr installation.
7. Does the community have a satisfactory method of trash disposal?	7. Although burning trash in open method, it is also the most ine harmful. A properly planned in erable; a well-run landfill sti
8. Are there arrangements for smokeless disposal of leaves in your community?	8. Smoke from burning leaves is am irritating of pollutants.
9. Is there a formal body, including representatives of government, industry, and the public, organized to improve the quality of the air?	9. A citizens' group, meeting regu attention on the problem, bring to bear, and stimulate a contin clear air.
10. Is there an organization concerned with plans for mass transit, land use, and open spaces?	10. It should consider the impact o air quality. Air pollution hap planning is needed to prevent i wind patterns should be conside parks, residential areas, highw facilities are laid out.
11. Are there regulations covering the type and quality of the fuel that is used in the community?	11. A growing number of municipalit to decrease emissions of sulfur
12. Is the community making full use of outside financial help?	12. State and Federal funds often a set up pollution control progra existing programs. In many cas

CHECKLIST		COMMENT
tential industrial emissions	5.	In many cases, careful supervision and cooperation by industry can keep the emissions from even old industrial equipment to a liveable minimum. When new equipment is installed, local officials should review the plans to ensure that the best possible control devices and techniques are used.
ions controlling the installa- ential and business equipment llution?	6.	Home furnaces and incinerators, drycleaning equipment and boilers, and other such equipment should be inspected by pollution control officials before installation.
y have a satisfactory method ?	7.	Although burning trash in open dumps is the cheapest method, it is also the most inefficient and most harmful. A properly planned incinerator is preferable; a well-run landfill still better.
ments for smokeless disposal community?	8.	Smoke from burning leaves is among the most irritating of pollutants.
body, including representa- nt, industry, and the public, ove the quality of the air?	9.	A citizens' group, meeting regularly, can focus attention on the problem, bring community resources to bear, and stimulate a continuing dialogue on clear air.
ization concerned with plans land use, and open spaces?	10.	It should consider the impact of its decisions on air quality. Air pollution happens by default; planning is needed to prevent it. Such factors as wind patterns should be considered when industrial parks, residential areas, highways, and recreational facilities are laid out.
ions covering the type and el that is used in the	11.	A growing number of municipalities have regulations to decrease emissions of sulfur and smoke.
making full use of outside	12.	State and Federal funds often are available to help set up pollution control programs or improve existing programs. In many cases, a community can

CHECKLIST		COMMENT
12.	(Continued)	receive several dollars in aid it spends.
13.	Do pollution control efforts end at the community's border?	13. Adjoining communities often sh pollution problem. Their offi should work together for mutua

Further information on any of these Federal programs can be obtained from the National A Administration, U.S. Public Health Service, Washington, D.C., or from any of the nine regiona Department of Health, Education and Welfare, situated in Boston, New York, Charlottesville (V Chicago, Kansas City (Missouri), Dallas, Denver, and San Francisco.

Source: *Clean air for your community*
U.S. Department of Health,
Education and Welfare.
Publication #1544.

New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12201

Pollution primer. National Tuberculosis and Respiratory Disease Association. New York. (Free)

CHECKLIST

COMMENT

receive several dollars in aid for each dollar it spends.

ol efforts end at the
?

13. Adjoining communities often share the same air pollution problem. Their officials and citizens should work together for mutual benefit.

on on any of these Federal programs can be obtained from the National Air Pollution Control
ublic Health Service, Washington, D.C., or from any of the nine regional offices of the
Education and Welfare, situated in Boston, New York, Charlottesville (Virginia), Atlanta,
Missouri), Dallas, Denver, and San Francisco.

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Welfare.
1544.

ent of Environmental Conservation

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New York. (Free)

APPENDIX B

Community Air Pollution Control Responsibility

Federal Clean Air Act of 1967:

Agencies involved in air pollution control

A. Atomic Energy Commission
   - Nationwide sampling program
   - Nuclear detonations and fallout
   - Use of isotopes
   - All airborne radioactive material

B. Department of Agriculture
   - As it affects persons, animals, and plants

C. Department of Commerce
   - National Bureau of Standards in chemical and physical problems, especially with methods of study analysis and techniques
   - Weather Bureau - through continuous measurements of temperature, motion, humidity, and the changing properties of the atmosphere
   - Civil Aeronautics Administration - with effects of visibility and aircraft operation

D. Department of Defense
   - Relation of visibility and flight safety
   - Effects on health and safety of personnel
   - Control in plants operated by services

E. Department of Interior
   - Bureau of Mines concerned with utilization of fuels and minerals

APPENDIX C

Key dates in Federal Clean Waters Program:

- 1899, Rivers and Harbors Act.
  Prohibited discharge or deposit into any navigable waters or any refuse except that which flowed from streets and sewers in a liquid state.

- 1912, Public Health Service Act.
  Authorized surveys and studies of water pollution, particularly as it affected human health.

- 1924 Oil Pollution Act.
  Prohibited oil discharges into coastal waters damaging to aquatic life, harbors and docks, and recreational facilities.

- 1948, First Federal Water Pollution Control Act with a 5-year expiration date.

- 1953, Federal Water Pollution Control Act extended for 3 years.

- 1956, First permanent Federal Water Pollution Control Act.
  Extended and strengthened the 1948 law in areas of enforcement and research and initiated grants for construction of municipal waste treatment works and research.

- 1965, Water Quality Act, further
  Federal Water Pollution Control A
  a Federal Water Pollution Control
  in the Department of Health, Educ
  Welfare. Required establishment
  standards for all interstate and

- 1966, Federal Water Pollution Con
  transferred to Department of the
  President's Reorganization Plan N

- 1967, Clean Water Restoration Act
  Federal Water Pollution Control A
  creased authorizations for grants
  sewage treatment plants, for rese
  to State water pollution control
  administration of the Oil Polluti
  Secretary of the Army to the Secr
  Interior.

APPENDIX C

lean Waters Program:

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f any refuse except that
streets and sewers in a

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and studies of water
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charges into coastal
aquatic life, harbors
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Water Pollution
5-year expiration

r Pollution
ed for 3 years.

ent Federal Water
Act.
gthened the 1948 law in
nt and research and
or construction of munici-
works and research.

- 1965, Water Quality Act, further amending the Federal Water Pollution Control Act. Established a Federal Water Pollution Control Administration in the Department of Health, Education, and Welfare. Required establishment of water quality standards for all interstate and coastal waters.

- 1966, Federal Water Pollution Control Administration transferred to Department of the Interior under President's Reorganization Plan No. 2.

- 1967, Clean Water Restoration Act, further amending Federal Water Pollution Control Act. Greatly increased authorizations for grants to help build sewage treatment plants, for research, and for grants to State water pollution control programs. Transferred administration of the Oil Pollution Act from the Secretary of the Army to the Secretary of the Interior.

MULTIMEDIA RESOURCES
Grades 7, 8, 9

STRAND IV
ENVIRONMENTAL AND COMMUNITY HEALTH

ENVIRONMENTAL AND PUBLIC HEALTH

TEACHER REFERENCES

These supplementary aids have not been evaluated. The list is appended for teacher convenience only and teachers in the field are requested to critically evaluate the materials and to forward their comments to the Curriculum Development Center.

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